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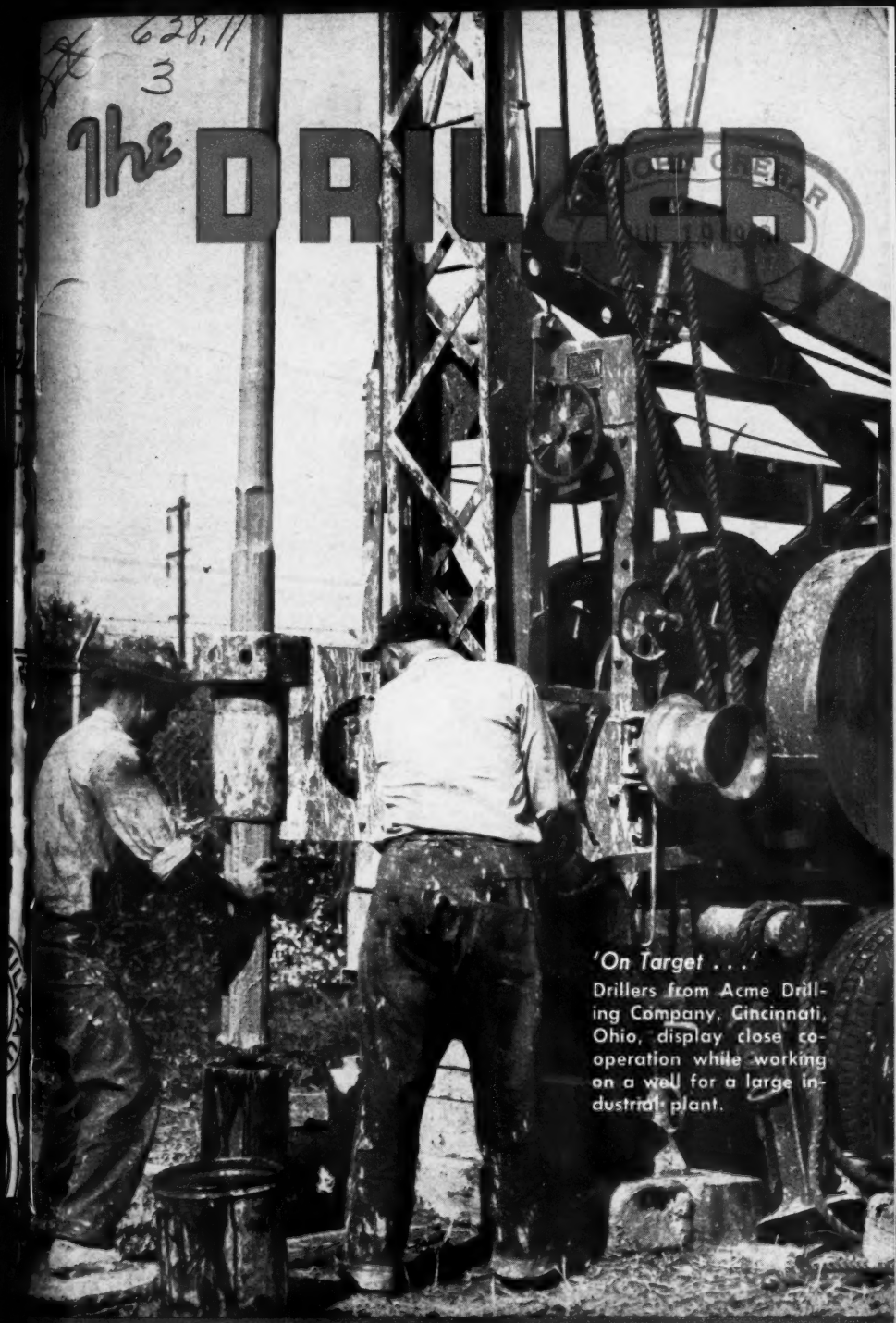
The DRILLER



'On Target . . .'
Drillers from Acme Drilling Company, Cincinnati, Ohio, display close cooperation while working on a well for a large industrial plant.

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VOLUME 22 JULY 1948 NUMBER 7

LONG WEARING STEELS

...Used in *Bucyrus-Erie* Drilling and Fishing Tools give you more service for less money!

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

These two types of Deming Jet Systems Meet MORE needs MORE ACCURATELY!

A definite need for two types of jet pumps and water systems—one designed for shallow wells—the other designed for deep wells—is met by the two Deming Jet Systems illustrated.

CAPACITIES

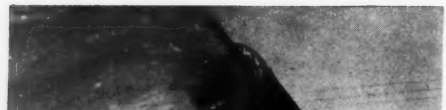
Figure 4950. 240 to 825 gallons per hour.
Figure 4902. 200 to 4500 gallons per hour.

For complete information on these up-to-date Deming Jet Water Systems, write for illustrated BULLETINS 4950-A (Shallow Well Jet System) and J-4900-E (Deep Well Jet System).

THE DEMING COMPANY
512 BROADWAY • SALEM, OHIO

EVERYTHING Practical
DEMING
THE COMPLETE LINE
PUMPS AND WATER SYSTEMS
Practically EVERYTHING

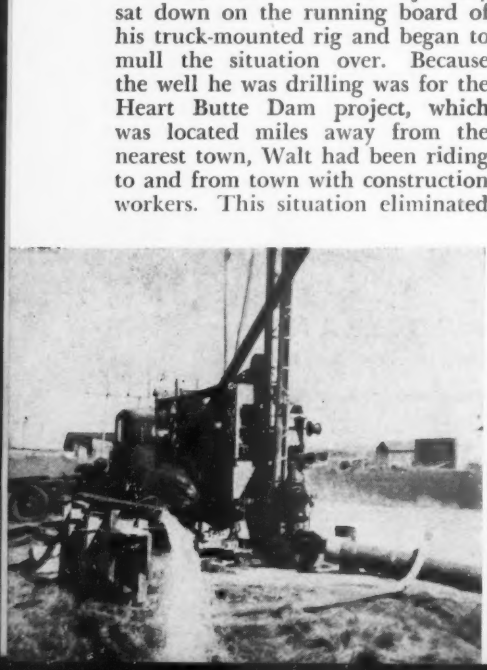
Unusual fishing jobs have had a way of popping up at the most unexpected times in Walter E. Kittler's drilling career — but the driller from Mandan, North Dakota, has employed both ingenuity and ordinary common sense to solve them.



Kittler's test well for Beulah, N. D., produced 92 gpm. Another view of the job (below) shows his 21-W.

Model Fishing Tool Aids Tool Recovery

MILES away from town, his tool string lost 60 feet down in a 5½-inch hole, Walter E. Kittler of Mandan, North Dakota, dejectedly sat down on the running board of his truck-mounted rig and began to mull the situation over. Because the well he was drilling was for the Heart Butte Dam project, which was located miles away from the nearest town, Walt had been riding to and from town with construction workers. This situation eliminated any possibility of his getting aid from a workshop until late afternoon when he returned with the workers. So with nothing to do but think, Kittler pondered about the circumstances which led to the fishing job.



He had been drilling for a day and a half in a ledge of hardrock, some 6½ feet thick. When his tools had finally broken through the ledge, the swivel socket had become unscrewed at the joint, leaving the tools at the bottom of the hole. With no fishing tools at hand, no way of fashioning any makeshift tools, Walt was in an embarrassing predicament.

While inwardly chastising Lady Luck for placing him in this position, he suddenly seized upon an almost ridiculous idea. An idea that might work once in a thousand tries, but with circumstances being what they were, there was no harm in trying. He started up the engine and lowered the swivel socket until he

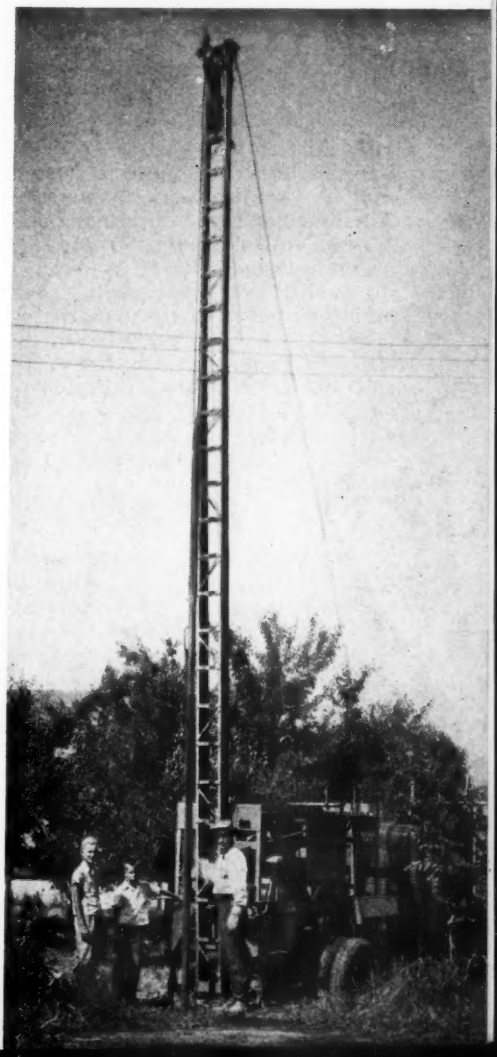
felt it contact the tool end. Taking a vise-grip pliers, he began twisting the cable to the left as far as it would go. Then he let it spin — nothing happened. He twisted it once more in the same manner and again let it spin back. This time he thought he detected a different feel in the line. With his fingers crossed, he started up the engine and slowly pulled on the bull reel hoist lever. In a few moments he learned the happy truth — the socket had turned enough to catch on the stem threads and his tools were out of the hole!

Followed Father's Footsteps

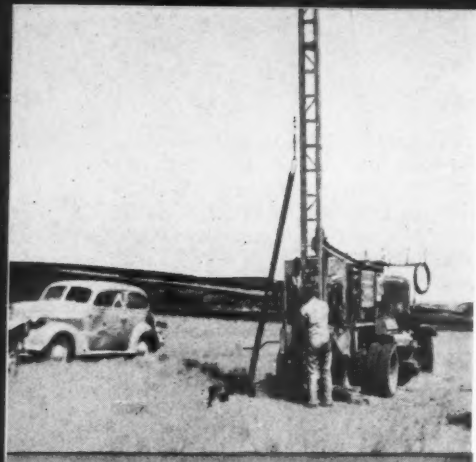
Of course, not all of Kittler's fishing jobs are quite as simple as that. But after you've been in the business as long as Walt has, you do pick up a few tricks and secure enough knowledge to invent some of your own when circumstances warrant. Ever since he was old enough to toddle, Walt played around his father's well rig. At the age of 15, the youngster was able to do his share of work with the old model Sparta rig his father owned. It was only natural that the son should follow in his father's footsteps, so it was no surprise that the two formed a partnership and worked together for many years. During the tough depression years, Walt would drill in the summer and work in the mines in the winter. In 1940 Kittler went into business for himself and built his practice to the point where he had three rigs working constantly.

However, the pipe scarcity during the last two years has forced him to dispose of two of his rigs, leaving him with a Bucyrus-Erie 21-W in tip-top running condition and two older rigs that are now on the shelf. As soon as "things open up," Walt is going to add new equipment to the business. "With old equipment you spend most of your time in the workshop," he remarked knowingly. He has a Ford pick-up truck with which he services his rigs and has a jeep station wagon on order.

The North Dakota driller considers most of the western part of the



• Walt is shown with his two sons, Billy and Kay, shortly after he started putting down a well for a creamery.



• A raging prairie fire that came within a few hundred feet of his rig forced Kittler to move to the above-shown position. People from neighboring towns, along with ranchers and farmers, finally brought the fire under control.

state his territory. Based at Mandan, he contracts work up to 100 miles in any direction from the city. Walt has drilled many kinds of wells, including farm wells, air-conditioning wells, residential wells, and municipal wells. He has also drilled test holes for coal mining firms (three to four-inch work that averaged 100 feet in depth), conduit and air holes for mines, and holes for elevator shafts. This latter work consisted of 14-inch holes drilled to a depth of 30 feet.

Drilled Blast Holes

Walt also tried his hand at some blast hole drilling for a railroad company. Using his 21-W, he put down holes six to twelve feet in depth. His total footage, drilled in sandstone and clay, amounted to 167 feet in one eight-hour shift. He made 17 moves during the day—the rig was moved with the derrick up. Another use that Kittler has made of his rig was in aiding building construction in Beulah, N. D. He raised three 3-ton I-beams to second story height when no other hoisting equipment was available. "Set 'em right up there slick as a whistle," was his comment on this operation.

Most of Kittler's work is done in glacial deposits which include sand, clay, rock, quicksand and some "bouldery" deposits. He finds a lot of good water in the coal seams in his territory. His average well is a four incher that goes down between 150 and 200 feet. The wells are cased most of the way, and are usually put down in formations that do not require screens. Only on municipal work does Walt put in screen installations. According to his recollections, his deepest well was somewhere between 500 and 600 feet in depth.

Old Equipment Faulty

Walt's ingenuity has paid off on other occasions besides the one first mentioned in the story. While drilling a 4¼-inch farm well near Big Bend Dam site a few years ago, Walt had another misfortune. He was using an old rig equipped with old style tools. The tools were fastened at the top of the drill stem by a couple of cable clamps through a home-made pin. The cable snapped at the pin, dropping the tools to the bottom of the 120-foot open hole.

Because there were no fishing tools that would fit the odd-sized tools, he was forced to make a few of his own. Unfortunately, none of the tools that the North Dakotan fashioned worked successfully. Finally, he decided to make a friction socket out of a length of 3¼-inch casing. He went down with this pipe and slipped it over the entire lost tool string. Then he poured gravel down into the casing to pack the tools in tightly. When this was finished, he had no difficulty in raising the pipe and dirt-lodged tools to the surface. However, he did encounter some difficulty in dislodging the tools from

(Continued on page 21)

Fitting Turbine Pumps To Wells

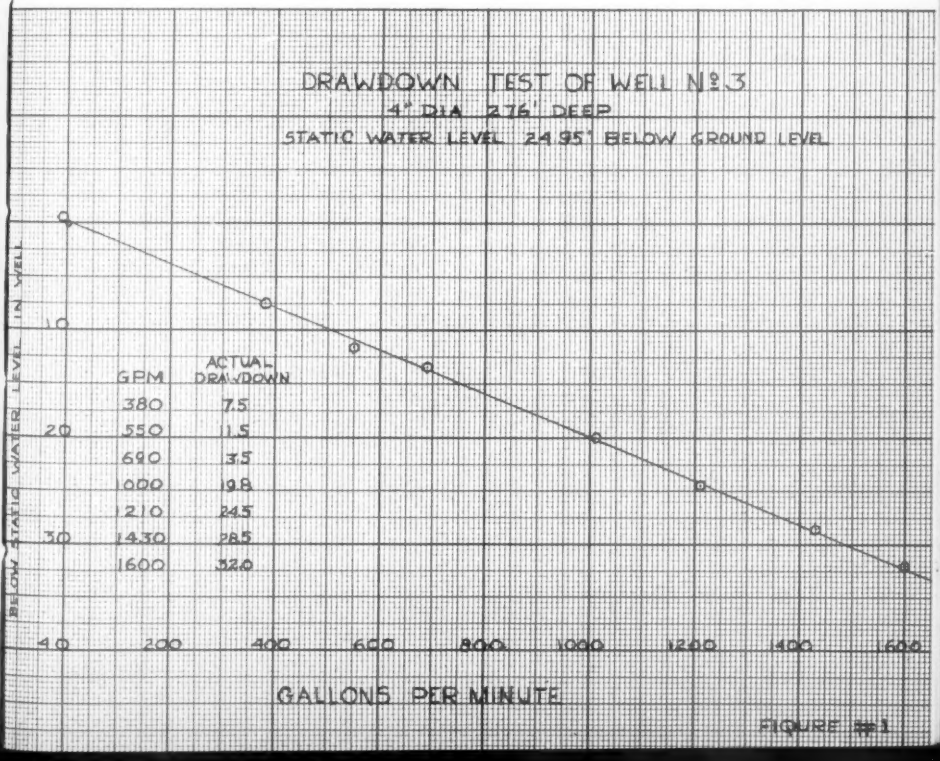
The following paper was delivered at the February meeting of the National Association of Vertical Turbine Pump Manufacturers. Presenting a graphic method of determining a well and system head, the paper simplifies the selection of turbine pumps. Drillers and engineers should find this type of solution helpful in handling their own well water supply problems.

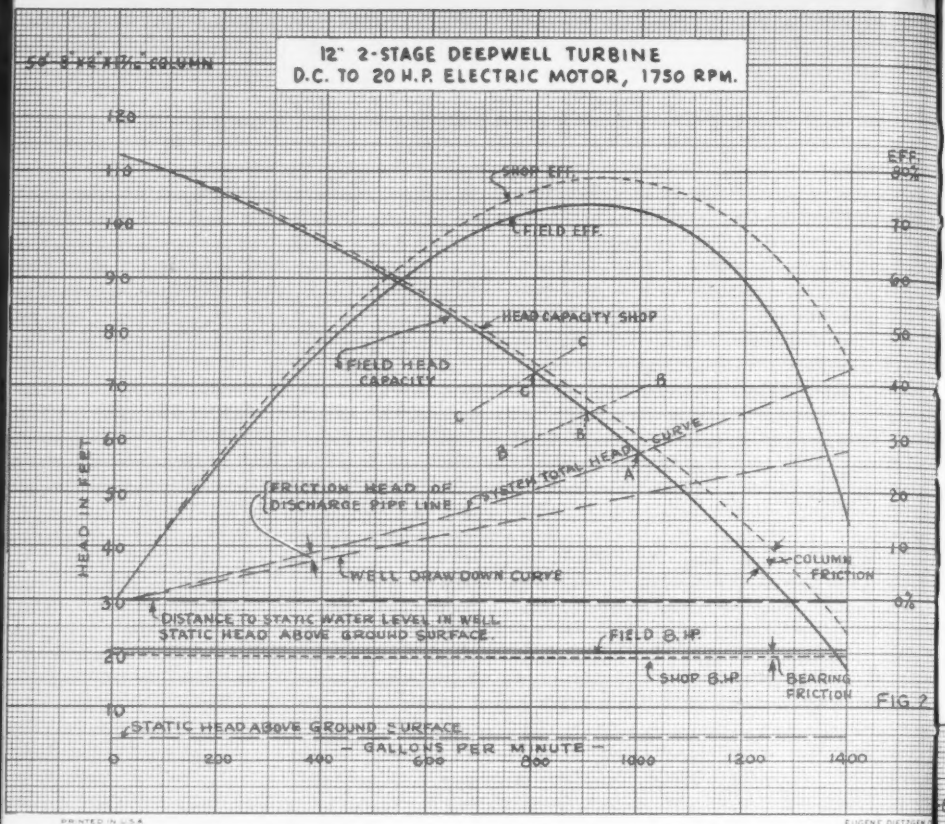
By L. C. Kimball

Sales Manager, Byron Jackson Co., Los Angeles, California

ONE of the most important factors contributing to the success of the deepwell turbine pumping installation is the well itself.

To obtain a good well, a competent well driller familiar with the geological and water conditions in the local territory should be engaged. Although the "type" of well may vary in different localities, it is advisable to follow the recommendations of the driller in this matter. A good grade of heavy casing should be used, so fabricated that during the process of drilling, a rigid alignment can be obtained by the driller, resulting in a straight and relatively plumb well. A well which is slightly off plumb *will* permit operation of a deepwell turbine pump, but a crooked well can cause disastrous re-





sults, due to misalignment of the column and line shaft.

The well should be of ample diameter to allow such clearance around the bowls that small gravel, or other foreign objects cannot lodge between the bowls and the well casing. Future difficulty in removing the pump and possible damage to the well may result from such a condition.

Perforation in the water bearing strata should be, whenever possible, below the anticipated water level in the well while pumping. When perforations are made above the pumping level, they are apt to cause cascading water, which tends to entrain air, resulting in inefficient performance of the pump.

The owner should see that an accurate log is kept by the driller, recording the various strata encountered, length of casing, and levels at which the well is perforated. Should it ever become necessary to revamp the well, due to changing water conditions or other causes, this log may prove invaluable after the well is completed.

After completion, the well should be developed by the use of a test pump for the purpose of removing sand and determining the yield of water. The test pump should be capable of producing a greater capacity than that anticipated in the permanent installation, in order to remove sand to the greatest possible extent. With such over-development, the permanent installation of a small

capacity will have little sand to handle, resulting in reduced wear on the pump. If the test shows insufficient water, additional drilling operations may be required to obtain the necessary yield.

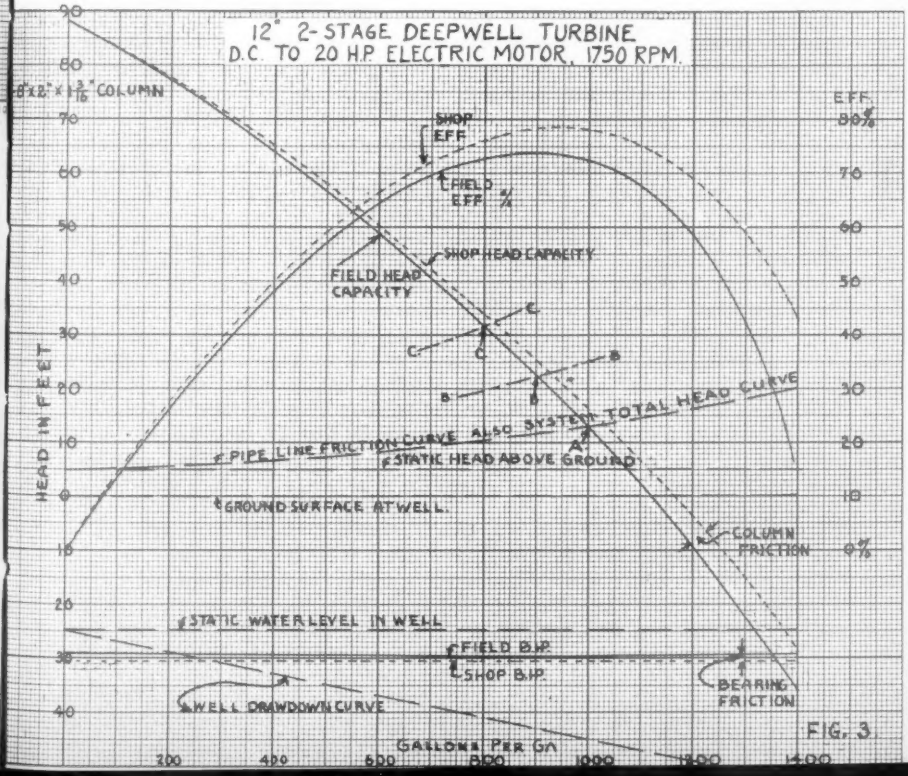
After the full capacity has been obtained from the well, the test should be carried on for a considerable period of time to eliminate the possibility of local conditions interfering with the true flow of the well under continuous operation. On completion of the testing, a chart should be made, showing the actual drawdown of the well plotted as a function of the yield, as shown on Figure 1.

In conducting the test for the drawdown chart, it will be necessary to make a capacity measurement by means of a weir, orifice, pitot tube or other suitable device, and obtain the drawdown with a detector line, electric sounder or detector hose.

With these data available, it is possible to make a correct selection of a deepwell turbine pump which will have a performance meeting the required conditions. In order to insure that this performance shall be maintained, all possible care should be given to the study of changed conditions which may exist in the future, due to lowering of the water table, very common in territories irrigated from underground strata.

To arrive at proper conclusions, it is advisable to lay out the well conditions on the pump performance curve, so that the owner may visualize more readily the final results. To illustrate this, Figure 2 and Figure 3 show the performance of a 12-inch two-stage, 20 HP, 1750 RPM unit having a bowl diameter of 11¼ inches and equipped with 50 feet of eight-inch standard pipe outer col-

(Continued on page 26)



The DRILLER

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Manufacturers Adopt Seal

A NEW seal has been adopted by the National Association Domestic and Farm Pump Manufacturers in an effort to build greater prestige for the products of their member companies in the water system industry, according to Herbert C. Angster, Executive Secretary and Director.

The seal is in the shape of a shield with the main part or body of the shield carrying the words, "Running Water — Everywhere You Need It." On the left and right-hand sides of the shield, in smaller type, appear the words, "National Association Domestic and Farm Pump Manufacturers."

Member companies are being urged to use this seal on their respective letterheads, printed matter, catalogs, trade paper and other advertising. It is quite likely that the seal will appear in decalcomania on hand pumps, windmills, power pumps, pump jacks, water systems and well supplies manufactured by the member companies. Application for copyright of the seal has been made so that only the association and its members will have proper right to use it.

Water Once Feared May Prove A Boon

AN underground water stream that once flooded the silver mines of Tombstone, Arizona, and drove away the city's population may now prove a boon to the water-searching residents of the former badman's town. It has been proposed that the water in the mines be pumped and used to aid the growth of Tucson, seventy-three miles away.

Mines Flooded

The mining district was practically closed down when water from the underground stream filled the shafts with water in the late 80's. Early this century, pumps were again put to work. When they stopped in 1910 they had been taking 7,500,000 gallons of water a day for three or four years without lowering the water level. Now Tucson has a pressing need for more water. Its population swelled, the city and surrounding territory are undergoing a "water pinch" because water levels are down to a dangerous extent.

In drilling deep wells, the bottom of the hole gets one degree hotter, on the average, for every 60 feet of depth.

Nose Acme Cable Tools

TRUSTWORTHY SINCE 1900

Fig. 115
Acme Prosser Swivel Socket

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. . . As proved throughout Acme's 48-years of specializing in Trustworthy Cable Tools . . . In Rope Sockets, for instance, whose EXTRA rugged character has made them the preference of discriminating Drillers through 2-generations.

From billet to finished Rope Socket, every factor for maximum field service is safeguarded: By rigid specificatons and analyses of premium-grade, CORRECT steels; heat-treatment process, electro-automatically controlled; and, "quality-comes-first" craftsmanship.

Every Rope Socket MUST uphold the Acme tradition —for greater stamina and performance . . . Factors which mean less cost per foot of hole drilled . . . Factors which can not, in cable tool manufacture, be subjected to "stop watch" curbs.

Acme's Prosser Swivel Socket (Fig. 115) is designed for wire cable use . . . As are our Babcock (stiff) and Burns Swivel. (Other types for manila cable.) All made to API specifications — unless ordered special.

See panel (right) for other Acme Drilling Tools — for that EXTRA service you prefer.

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★ TRUSTWORTHY Tools, write TODAY ★
★ for new Catalog — expressly de- ★
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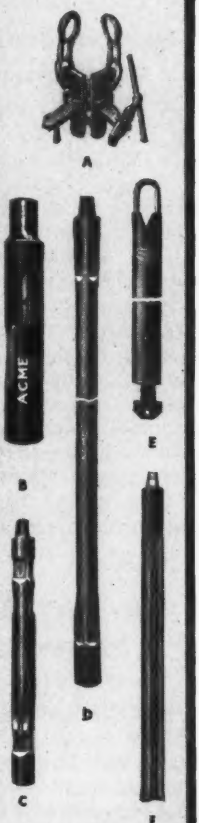
More of EVERYTHING You Need in an Acme String . . .



A—Wire Line Clamp, 12"
B—Burns Swivel Socket
C—Drilling Jar
D—Drilling Stem
E—Bailer
F—Drilling Bit

Acme Fishing Tool Co.

PARKERSBURG, W. VA.

ACME DRILLING & FISHING TOOLS
Since 1900

NEWS OF THE MONTH

Florida Drillers Convene July 1-3

THE Florida Well Drilling Contractors Association, Inc., will hold their eighth annual convention at Tampa, Florida, July 1, 2, and 3, according to M. E. May, Convention Chairman. Convention headquarters will be at the Mirasol Hotel on Davis Island.

The technical sessions and exhibits will be held at the Gasparilla Building on the State Fair Grounds. Three days of educational lectures and demonstrations combined with plenty of entertainment have been planned by the program committee. They expect a record turnout, including many visitors from Cuba and South America.

Two-Day Meeting Scheduled By Empire State

INAUGURATING its first two-day meeting, the Empire State Water Well Drillers' Association will hold an annual convention in Buffalo, New York, at the Hotel Statler, July 14 and 15.

Convention Chairman, Ray S. Knapp, Lancaster, and a convention committee have been working on a program to interest all drillers. Present plans call for the setting up and operating of five different makes of drilling rigs in a flint rock formation near the hotel, a large display of drilling equipment, and a list of prominent speakers including F. J. Spang, Spang & Co., and C. R. Cox, Chief of Water Supply, New York State Department of Health. Movies on the manufacture of wire rope and on underground water supplies are also scheduled for the program.

Entertainment plans call for a sight-seeing trip to Niagara Falls and a breakfast broadcast. Members of the association extend a cordial invitation to all drillers and their employees and their wives to attend the meeting.

Other members on the Convention Committee are: Marvin W. Wendt, Sanborn; Clifford L. Ehmke, Silver Creek; Roy Dawley, Silver Creek; John Kuhn, Williamsville, and Neil A. Crandall, Oriskany.

Hoosier Convention Held At Purdue U.

A LARGE group of drillers attended the seventeenth annual convention of the Indiana Well Drilling Contractors Association, Inc., held May 14 and 15 on the Purdue University campus, Lafayette, Ind.

Technical discussions featured the first day's activities which were topped off with a banquet and entertainment program presented at the Fowler Hotel. The final morning's program, besides including more technical discussions, allowed time for drillers to meet with the manufacturers' representatives.

The following officers were elected at the business meeting: R. J. Sriver, South Bend, President; J. J. Moser, Vice-president; H. K. Carr, Greentown, Secretary; W. L. Gordon, Churubusco, Treasurer, and Elmer Zuber, Fort Wayne, Director .

Tarheel Drillers Gather In August

THE North Carolina Well Drillers Association convention will be held at the Ocean Terrace Hotel, Wrightsville Beach, North Carolina, August 29, 30, and 31, according to R. O. Heater, President.

Although the program has not been completed, Heater indicated that the entertainment plans include surf fishing, deep-sea fishing, a boating trip down the Sound, and a sightseeing trip to historic Wilmington, N. C.

Kansas Group Studies Problems

A MEETING of the Kansas Water Well Drillers' Association was held in Larned, May 21 and 22, for the purpose of adopting a constitution and discussing water problems in Kansas.

President E. J. Jungman, Topeka, announced that the various subjects discussed at the meeting included the need for a state water well drillers association, the relation of the state geological survey to the association, underground formations in Kansas, brine contamination of pure water supplies, and water laws in general.

Movies Shown

Speakers were L. D. Solden, Bruce Latta, and O. S. Fent, drillers from Salina; Dr. John C. Frye and Dr. W. H. Schoewe of the Kansas State Geological Survey; Ogden S. Jones, Division of Sanitation of the state board of health; George S. Knapp, Division of Water Resources, state board of agriculture, and George B. Weeks, Kansas Industrial Development Commission.

Two sound films, "Safe Water from Small Supplies" and "Clean Waters," were shown at the banquet.

Large Exposition Marks Michigan

THE largest display of well drilling equipment in the association's history featured the twentieth annual convention of the Michigan Well Drillers Association held at the 119th Armory, Lansing, Michigan, July 4 and 5.

Supporting the manufacturers' displays was an interesting program featuring the annual banquet and entertainment held at Hotel Olds on the final evening. The address of R. D. Faust, State Water Supply Bureau of Engineering Discussions, keynoted Saturday's technical sessions. The association expressed its satisfaction with their officers by re-electing the entire slate to office.

Best known—easiest to sell

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THE F. E. MYERS & BRO. CO.
Dept. M-37
Ashland, Ohio

New Fountain Pump

THE above picture of the thirsty young woman and her dog drinking simultaneously from a new type "drinking fountain pump" produced by the Baker Manufacturing Company, Evansville, Wisconsin, illustrates graphically that the little red school house with its bucket well is practically a thing of the past.

According to the manufacturers, the bubbler was developed from a suggestion made by Louis T. Watry of the Wisconsin State Board of Health. No extraordinary claims are made for the fountain in the company's news release which states: "In fact, all it's good for is to give a thirsty kid in a country schoolyard a clean fresh drink of water."

H. S. Hubler

The death of one of the country's oldtime well drilling contractors, H. S. Hubler, Port Royal, Pennsylvania, saddened his many drilling acquaintances throughout the East. Mr. Hubler, who passed away April 15 in Port Royal, drilled many wells in Pennsylvania, Ohio, New Jersey, and New York. He entered the business in 1897 with a horse power drill and, until his retirement in 1927, used horse power and steam drills exclusively.

Mr. Hubler is survived by one son, F. J. Hubler, head of the Hubler Well Drilling Company, and six grandchildren, all engaged in the drilling business.

WHY *Tiger Brand* IS THE BETTER WIRE LINE BUY!

THE quality of U·S·S American Tiger Brand Wire Lines is closely guarded every step of the way — from ore mines to furnace; from rods to wire; from wire to rope fabrication. Constant research, severe testing, and the most modern production facilities assure you of unvarying quality. You can't buy wire lines with greater stamina than Tiger Brand at any price!

But *good* wire lines aren't all you get when you buy Tiger Brand. You get the *free* services of the largest force of field engineers available anywhere. These wire rope experts are available right on your job . . . to help you determine the right line for your needs . . . and to help you solve any out-of-the-ordinary wire line problems.

Your supplier now has, or can quickly obtain, any quantity of all sizes of American Tiger Brand Wire Lines. See him today. Don't get caught with your rigs down because of line trouble. Rig up with Tiger Brand and keep drilling!

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AMERICAN TIGER BRAND WIRE LINES

UNITED STATES—STEEL

Delayed Well Makes Drillers Liable

1. Does a landowner waive the right to collect damages for loss of a crop, due to a driller's delayed completion of a well, by permitting the driller to start work after considerable delay?

2. Does the landowner waive his claim to damages by paying part of the contract price?

3. Does the landowner waive his claim by signing a drilling progress slip stating that the well had been *completed to his satisfaction?*

4. When the contract does not specify a date for starting or completing the work, does the owner waive his claim for damages for delayed completion because he does not make a written claim (under a clause of the contract requiring written claims to be made within such time as to "shortage or noncompliance with this order") within ten days after the well's completion?

All these questions were answered *no* by the California District Court of Appeal, Fourth District, in the case of Wilkinson & Co. v. McKinley, 190 Pac. 2d 35, decided March 1, 1948.

Well Start Delayed

The contract was made October 20, 1943, but the drilling company did not start work until February 25, 1944 — more than a month after what the court regarded as a reasonable time for starting. The well was not completed until August 10, 1944, although the court found that six weeks was a reasonable time for completion after starting work.

1. The Court of Appeal decided that although the owner permitted the drilling company to start drilling the well at a date when the well should have been completed by original terms, the landowner did not forfeit the right to claim damages for loss of a crop resulting from failure to complete the well in a reasonable time, as agreed. Evidence showed that, before he had knowledge that the driller would not complete the well, the landowner planted his crop and permitted the drilling to start, in reliance on the driller's promise to commence and complete the well within a reasonable time.

2. The court also decided that payment of $1250 on a $4,427.27 bill presented by the drilling company did not waive the landowner's damage claim, because he protested the bill and refused to pay the full amount claimed.

Report Signed

3. When the work was completed, the landowner's agent signed a driller's report showing the depth of the well and formation changes at various depths and bearing the notation: "Well completed and measured out to my satisfaction." The court said that this did not necessarily show waiver of a "claim for damages for failure to drill *within the time agreed upon.*"

4. On the fourth point, the Court of Appeals declared that the written agreement "made no reference to the time within which the drilling was to be commenced or completed, but it merely required a claim to be filed within ten days from *delivery* for any *shortages or noncompliance with the written order.* No written

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REG. U. S. PAT. OFF.

FOR DOMESTIC

INDUSTRIAL

COMMERCIAL

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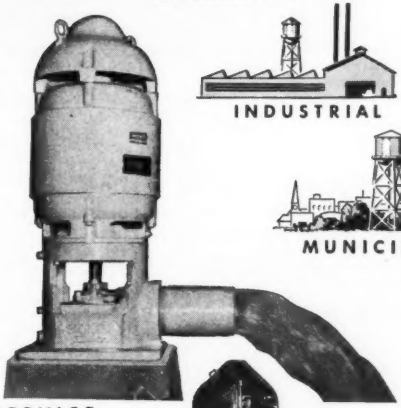
AGRICULTURAL SERVICE



The low cost pump for developing a maximum water supply from small diameter wells

Here is one of the most simple and most positive of all deep well water pumping systems. The HiLlift pump has almost universal application because it's easy to understand, install and operate. In the Hi-Lift, Peerless utilizes an ingenious pumping element to literally squeeze water upward. Its pumping element consists simply of a hard chrome helically contoured rotor revolving in a similarly contoured rubber stator. That's all there is to this positive Peerless method of water lifting. It's the most forward step in pumping developed in the last 10 years, proved by thousands of successful installations in all kinds of service.

Peerless Bulletin B-142 fully describes and illustrates the many advantages of the Hi-Lift Pump. Write for your copy today!

CAPACITIES: 600 to 3300 Gallons per Hour from well depths to 600 feet.

Hi-Lift's pumping element is water lubricated, operates at half the usual pump speed; resists sand cutting abrasion and corrosion. When used with pressure tank, extremely high pressure may be developed without change or adjustment. These and many other Hi-Lift features are sure to make big savings in your water supply costs.

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for
SMALL WELL DRILL OPERATORS

This simple system does away with bookkeeping worries yet makes all the pertinent details of your business quickly available.

Attach a dollar bill and this ad to your letterhead or business card for DRILLER'S FIELD RECORD booklet, sample sheets and other pertinent information.

Mail to:

DRILLER RECORDS
BELLE MEAD, N. J.

For Utmost DEPENDABILITY
PUMPS *"by Aurora"*

AURORA DEEP WELL TURBINES
are available in sizes of 4" to 24" for every pumping condition—oil or water lubricated. Streamline designed for highest efficiency and longest life.

APCO Master-Line WATER SUPPLY SYSTEMS
Here is the "Best Buy" in water systems for farm and home. Turbine-Type, Simple, Compact, Silent. Life-Time service of generous, low cost water supply. Fully Guaranteed.

for **SHALLOW WELLS**

We also make all Kinds of Centrifugal Pumps and Jet Pumps

Write **TODAY** for **CONDENSED CATALOG "M"**

AURORA Always PUMPS — **AURORA PUMP COMPANY**
58 Loucks St., Aurora, Illinois

notice of failure to drill the well *within the required time* was required under that clause."

But because the drilling company was entitled to judgment for a balance on the contract price, above the amount of damages payable to the landowner, the Court of Appeals decided that the company was entitled to judgment for court costs.

—A. L. H. Street.

Change Announced

IMPORTANT changes in office have been announced by the Baker Manufacturing Company, Evansville, Wisconsin, makers of windmills, windmill pumps and deep-well water systems.

Named to position of President was J. G. Baker, for the past ten years Vice-president and Chief Engineer of the organization. Because the company is presently conducting field tests on experimental equipment, Mr. Baker will continue his association with the engineering staff.

R. B. Townsend, former branch manager of the company's Omaha office, was appointed to the position of Treasurer and Vice-president in Charge of Sales. W. C. Schneider was chosen as Secretary.

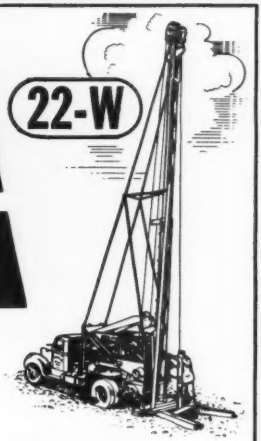
Sales Promotion Repays Drillers

PROMOTING, selling, and servicing are the pertinent factors in the water system industry," M. B. MacNeille, chairman of the Engineering and Production Committee, National Association of Domestic and Farm Pump Manufacturers, recently told the Farm Section meeting of the Edison Electric Institute in the Edgewater Beach Hotel, Chicago.

"Promoting the sale of water sys-

MORE HOLE
MORE JOBS
MORE PROFITS!

BUCYRUS ERIE

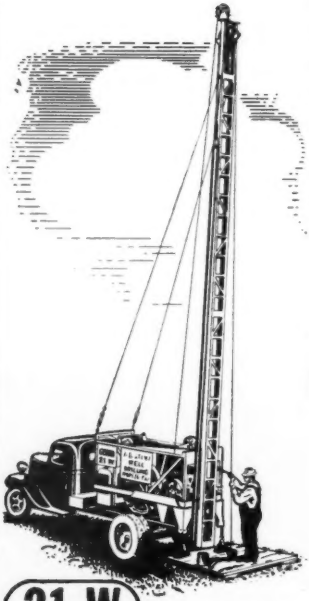


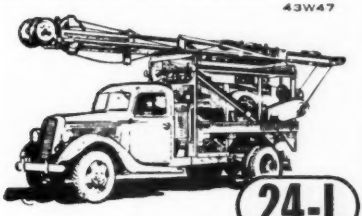
UNEXCELLED drilling action that gives your tool string the punch to put down extra footage each shift . . . easy-rolling mobile mountings and quick telescoping derricks that cut down your moving and rigging-up time, enabling you to handle a bigger territory and more jobs — these speed features can help you earn more profits!

Why not investigate the entire line of profit-earning Bucyrus-Erie water well drills?

BUCYRUS-ERIE, South Milwaukee, Wis.

43W47





tems to our rural and suburban friends will amply repay: the manufacturers of water systems; the manufacturers of motors and controls required by water system manufacturers; power companies; water system wholesalers and jobbers, and, last but not least, the water system dealers.

Service Stressed

"A common error in selling a water system to a rural customer," said MacNeille, who is manager of the Pump Division, A. Y. McDonald Mfg. Co., Dubuque, Iowa, "is to permit price limitations to shape the selection, and sell him a water system that is too small to meet his needs. A water system that is too small will soon have to be replaced by one large enough to supply the customer's requirements. Replacing such a misfit means a greater investment than would have resulted if a system had been originally provided which was large enough to do the job."

Speaking of water system service, MacNeille stated, "The dealer who would continue in the water system business must develop and maintain a service department fully adequate to take care of the customers to whom he has sold equipment. A part of the dealer's premises should be set aside for the service department, and the service department must be manned by a trained foreman and staff, fully competent to install repair parts, make adjustments, maintain and keep in operation the water systems sold by the dealer. The smart dealer will not overlook the income from his service department.

SPECIAL WATER WELL PATTERN

HAMMER FORGED DRIVE SHOES

- **Extra heavy**
- **Hammered from seamless steel**
- **Hardened on cutting edge**
- **Fit any standard pipe**
- **Sizes: 2 to 30" dia.**

WRITE FOR BULLETIN 50-F

LARKIN & CO., INC.

Butler, Pa.

New Product Prevents Clogging

THE use of "Micromet," reputed by the manufacturer to control corrosion, prevent lime scale and stop "red water" discoloration in various types of water systems, is described in a new illustrated folder published by Calgon, Inc., Pittsburgh. According to the manufacturer, small amounts of the products are slowly dissolved into the water systems by means of a feeder to control the afore-mentioned troubles in water systems handling up to 1,000,000 gallons per month.

The folder explains that the treatment is especially recommended for use in hospitals, schools, apartment houses, small hotels, restaurants, small manufacturing plants, farms, dairies, theaters, and other establishments. It is pointed out that practically no attention is required with this treatment; the user adds a small amount of the product to the feeder once a month

to replace that which has dissolved. Protection of hot water systems, air conditioning and refrigeration systems, and the cooling systems for industrial equipment are among its many applications.

Model Tool . . .

(Continued from page 6)

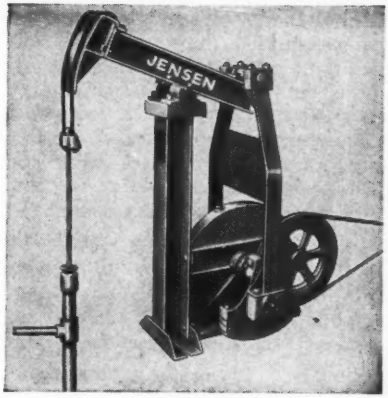
the casing above ground because they were packed in so tightly.

On another occasion, he completed drilling a farm well on the banks of the Missouri near Beulah. The well was finished at 260 feet and Kittler began to install the pump. A faulty pump jack loosened during the operation and Walt found himself looking down the hole for 160 feet of pump pipe with an extra length of pump rod attached.

Invents Tool

That night, Kittler lay awake scheming ways of making various tools that would recover the lost pipe. Upon arising the following morning, he went to his shop and began experimenting. The difficulty involved two important factors. The first was that there was an extra length of 7/16-inch pump rod extending above the 1¼-inch pump pipe. The other important fact was that the pump rod was leaning against the wall of the well, which meant that the fishing tool had to eliminate this problem before making contact with the pump pipe.

Walter busied himself in the shop, making various models of fishing tools that he thought might turn the trick. The tool that finally evolved from this research was first tried experimentally in the shop on a small scale. It passed the shop experiments perfectly. One advantage was the tool's simplicity. It consisted of a home-made funnel attached to an inch and a quarter pump pipe. The



Pump Handle Pete Says:

Want Dependable Water for your customers?

Why, of course you do—otherwise you wouldn't be in business. And, the more dependable and cheaper water is the better your customers will like it.

To help please your customers' water needs you ought to know about Jensen Pumping Jacks. They're simple in design, ruggedly constructed and inexpensive to operate. You can recommend Jensen Jacks on any well 100 ft. or deeper and be sure your customers will have plenty of dependable water.

Write to Coffeyville today for literature. You'll be glad you did.

JENSEN
BROTHERS MFG. CO.
COFFEYVILLE, KANSAS, U. S. A.
EXPORT OFFICE, 50 Church St.
New York City

funnel, made to fit snugly inside the casing, guided the pump rod coupling up into the threaded inch-and-a-quarter pipe which then was able to make contact with the lost pipe. By turning the fishing pipe, the lost pipe was screwed onto it. It was just a matter of minutes before the lost pipe was hauled to the surface.

The North Dakotan dresses all of his own bits in the shop. Small bits are dressed by the hand forge method and bits from six to ten inches in size are hard surfaced. He generally builds them up with "Stoody Borod" welding rod. Because there are not many rocks in his territory, it is not necessary for Walt to dress his bits in the field. One little tip that Kittler passes on for what it is worth is the fact that he is strictly an earth socket driller when drilling in clay. "I discovered that I can get better footage while drilling in clay with an earth socket than with any other tools."

Incidentally, Walt first learned to dress bits by following instructions in a Bucyrus-Erie tool catalog. "Never had any trouble and all my bits turned out fine," Walt remarked. Kittler, who handles and installs various makes of pumps, backs up these installations by giving his clients expert service work when it is needed.

QUALITY COOK PUMPS

A. D. COOK
Incorporated
Lawrenceburg, Indiana

California Levels Rise In North

ACCORDING to the monthly water report issued by the U. S. Geological Survey, the critical water-supply situation in northern California was alleviated considerably during April, although ground water levels in Santa Barbara County declined seasonally as pumping for irrigation increased.

The same situation held true in New Mexico where sub-surface water supplies are used for irrigation — increased pumpage resulting from the irrigation season lowered ground water levels. Rates of decline were greater than a year ago.

Floods in South

The above-mentioned arid regions could have used the heavy rainfall that Georgia and Florida received during the month. This heavy precipitation caused floods and raised ground water levels to new highs. In Georgia many dug wells were said to be overflowing, a phenomenon hitherto unreported.

New England water levels fluctuated, but at the month's end water levels in test wells were generally below normal. Midwestern levels in many observation wells were recorded near the normal mark for April.

"Don't Run, Zeke, Them's Real Fish!"

WELL drillers who begin seeing pink catfish rather than their customary herd of pink elephants should not become alarmed and switch brands — there's a possibility that their vision may be normal. According to newspaper reports, two pink catfish without eyes have been pumped from a deep well near San Antonio, Texas. This was verified by Dr. Carl L. Hubbs, fish expert of the Scripps Institution of Oceanography.

Simple Explanation

The fish specimens, now mounted in a San Antonio museum, probably were survivors of catfish which centuries ago became trapped in an underground water system. Through evolution and lack of sunlight they lost their eyes and skin pigment. They were about 3½ inches long and came from a well 1,250 feet deep, Dr. Hubbs said.

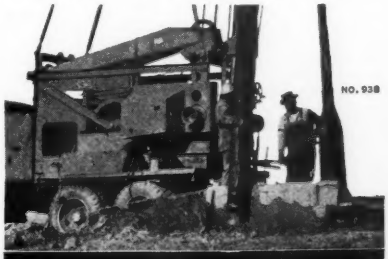
New Pump Line In Production

A COMPLETE line of domestic water pump systems, designed for both shallow and deep wells, has recently been announced by Ingersoll-Rand. The pumps operate on the jet principle and are suited to farm homes, summer cottages, suburban homes, clubs, resorts and hotels where mains are not available. In addition, they may be used by small factories, dairies, laundries, and amusement parks dependent on their own water supply.

With the rural electrification program stimulating demand for domestic water pumps, the announcement of the line can be of especial

Rig up now for more profitable drilling

Macwhyte Hi-Lastic is specially made for water well and blasthole drilling. With this line, tools can be carried higher because they will drop farther for a given stroke, therefore striking a harder, faster blow. For speed and economy buy Macwhyte Hi-Lastic Wire Line. On deep wells, Macwhyte Standard Cable-Tool Lines. For sand lines, Macwhyte (6 x 7) Mild Plow Steel. **Ask for circular 47-21.**



Get the correct line for your equipment from

MACWHYTE COMPANY

2939 Fourteenth Avenue, Kenosha, Wisconsin, or any authorized Macwhyte Distributor or Mill Depot

interest to plumbing and heating contractors and to water well contractors.

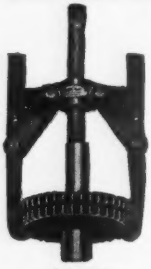
Three types of pumps are included in the line. The vertical deep well pump, for lifts up to 90 feet, operates with ¼, ⅓ or ½ horsepower motor, and delivers from 215 to 625 gallons per hour, depending on motor size and depth of water level. The horizontal deep well pump, operating with a ¾ or 1 horsepower motor, is designed for higher lifts and greater water delivery. The 1 horsepower model provides from 160 gallons per hour at its maximum lift of 120 feet to 1270 gallons per hour at 20 feet.

The line will be sold through selected authorized resale outlets in suburban and rural areas. Further information on the line and its distribution may be obtained direct from Ingersoll-Rand, 11 Broadway, N. Y.

SURPLUS STOCK SALE!

52 Brand New

Gear and Wheel Pullers



Popular Size
Model No. 1004.

The harder the pull, the tighter the arms hug the work. Made of heavy one-piece forged steel yoke. Heat treated forged steel arms and straps. Will take gears, wheels, etc., up to 18" in diameter.

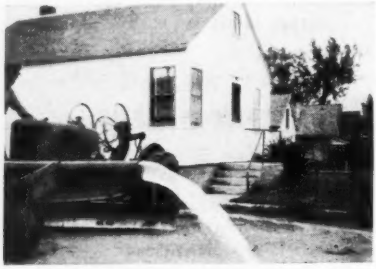
Diameter .....18"
Reach .....15½"
Diameter, Screw .....1¼"
Length, Screw .....16"
Hole adjustment .....3 hole
Weight .....40 lbs.

Bargain Price $22 ea. F.O.B. South Milwaukee

Bucyrus-Erie Co.
South Milwaukee, Wis.

Before and After

• A glance at the snow scene pictured above is all that is necessary to inform the reader that winter in North Dakota can sometimes make a well driller's life unhappy. However, when nature gives I. C. Grider of Rugby, N. D., a chance to do his stuff he can put down an 8½-inch well to a depth of 72 feet in three day's time, like the one pictured below. Drilled for the city of Rugby, the well was tested at 440 Gpm.



Turbine Pumps . . .

(Continued from page 9)

umn, two-inch inner tubing and 1-7/16 inch line shaft. These charts show a combination of pump performance, well drawdown, and discharge line characteristics plotted by two methods.

In the example, the pump has a

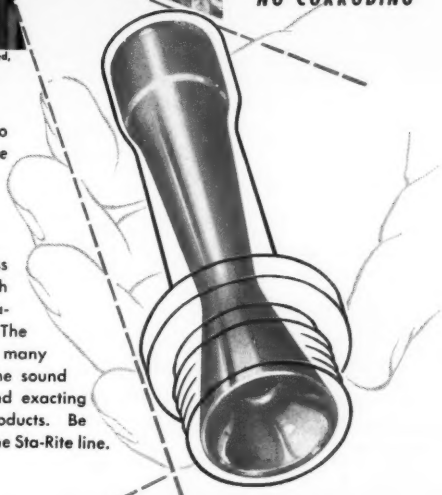
(Continued on page 26)

Illustrating how each Sta-Rite Jet Pump Venturi is glass-lined, fired and baked to insure mirror-smooth water passage.

Only JET PUMPS Made by STA-RITE have Glass Lined Venturi*

***An Engineering Achievement That Insures:**

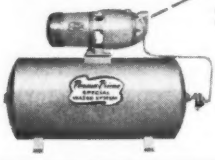
LONG LIFE
NO RUSTING
NO CORRODING



THE glass-lining that is fired into every Sta-Rite Jet Pump Venturi is the result of years of development in one of the nation's finest ceramics laboratories. A feature used exclusively by Sta-Rite in the manufacture of jet pumps, this glass lining has proved its value through years of service toward the elimination of wear, rust and corrosion. The glass-lined venturi is only one of many Sta-Rite developments typical of the sound planning, painstaking research, and exacting production built into all Sta-Rite products. Be sure of customer satisfaction. Sell the Sta-Rite line.

STA-RITE PUMPS, WATER SYSTEMS and SOFTENERS
for farm, home and industry

PERMA-PRIME Special Shallow Well Water System



A complete, compact water system, with the glass-lined venturi built right into the pump combines all the wanted attributes of the Sta-Rite jet pump with the need for a self contained unit for simple installation and quiet operation. 400 G. P. H. capacity mounted on 17 gallon tank.

STA-RITE HAS GALVANIZED STEEL TUBE
The Perfect Pipe for Water System Installation

Write **STA-RITE PRODUCTS, INC.**
Dept. D 78 DELAVAN, WIS., U.S.A.
Tell me more about Sta-Rite Water Systems, including Galvanized Steel Tube for installing them.

Name .....
Company .....
Address .....
City ..... State .....
Name of Jobber .....

Turbine Pumps . . .

(Continued from Page 24)

capacity of from 800 to 1000 Gpm., installed in a 14-inch well, with drawdown characteristics as shown in Figure 1; and must deliver water five feet above the ground surface, pumping through a pipe line having a friction curve as shown on Figure 2 and Figure 3. Under test, the depth to static water level in the well was 25 feet. The drawdown, as per Figure 1, was about two feet for every 100 Gpm. pumped.

By referring to Figure 2, it will be noted that we have plotted, first at five feet the static head above ground surface and at 30 feet the sum of this five feet and the 25-foot static level in the well. Starting from this 30-foot line, the well drawdown curve is plotted from Figure 1, which, at the 1000 Gpm. point shows a 20-foot drawdown, giving a 50-foot total. Added to this well drawdown curve is plotted the friction curve of the discharge pipe line, which also shows at varying capacities the total head of the system.

System Determines Head

This system, comprising a well and a pipe line, has one and only one capacity at one head. The total *system head* curve shows from zero to maximum capacity the corresponding heads of the system, and its intersection with the field pump performance curve determines the operating point of the pump, in the example 1000 gallons, 58 feet. No pump can be made that will deliver 1200 gallons, or in fact any other capacity than 1000 Gpm., on this system at a 58-foot head. It is the *system* that determines the head at any given capacity. For a larger capacity than 1000 Gpm., the head will be higher, and for a lower capacity the head will be lower.

If the system characteristic changes due to a general lowering of the water table or other causes, the starting line of 30 feet, Figure 2, or the drawdown curve of Figure 1, or the friction curve or any or all will change. The total system head changes at all capacities. Such possible changed system heads are plotted as lines BB and CC on Figure 2 and Figure 3, intersecting the pump characteristics at points B and C, giving heads of 65 and 73 feet, respectively, at capacities of 900 and 800 gallons. The field efficiency curve shows a practically constant value over this range; therefore, if the anticipated facts are correct, the pump selection is satisfactory.

Manufacturers Assist

Figure 3 shows another method of layout leading to the same conclusions. The system is plotted in two parts as it exists in the field above and below ground surface, the discharge line friction curve giving the total head characteristics of the system above ground surface. As before, on Figure 2, the intersection of pump and system characteristics (Point A gives on 1000 Gpm. a total head of 58 feet made up of 13 feet above and 45 feet below ground surface.

In making the selection of a deepwell turbine, it should be definitely understood that all pump performance curves should include the hydraulic and mechanical friction losses of the pump column in its field setting, thus showing conditions as they will actually exist in the field.

All responsible manufacturers of deepwell turbine pumps maintain sales and engineering organizations qualified and ready to assist in the selection of the most economical pump for any given service.

When your customer's well presents unusually tough pumping problems, don't say "no"— recommend Jacuzzi. For shallow wells or for depths to 600 feet, Jacuzzi offers a complete line of injector pumps. They're backed by national advertising that is making Jacuzzi stand for "Automatic Water" everywhere. With performance that is easy to sell, Jacuzzi Pumps will keep on selling *you* through long years of efficient, economical, dependable service.

The Jacuzzi Line includes pumps for domestic, industrial, irrigation use... electric motor, gasoline engine or belt driven... a pump for every purse and purpose. Write us for further information and name of nearest Jacuzzi distributor.

JACUZZI BROS. Inc.
RICHMOND, CALIFORNIA
PLANT ALSO AT ST. LOUIS, MO.

Jacuzzi
PUMPS & WATER SYSTEMS

ORIGINATORS OF INJECTOR TYPE PUMPS

WIT BITS

Job Applicant: "I'm Gladys Zell."
Personnel Manager: "I'm pretty happy myself. Have a seat."

The hillbilly, with a dizzy blonde hanging on his arm, took the pen handed him by the hotel clerk and signed the register with an X. With a thoughtful look on his face, he hesitated, then circled the X. "A lot of people sign with an X, said the clerk, but that's the first time I've ever seen it circled."

" 'Tain't nothin' so dadburn odd about hit," retorted the hayseed, "when I'm a' runnin' around with wild women I don't use my right name."

"Taxi! Taxi!"
"Were you calling me?"
"Yes."
"Well, I'm already engaged."
"Oh, are you? Well, I hope you'll be awfully happy."

Hungry customer (at lunch counter): "One roast beef sandwich."
Waiter: "Will you eat it here or take it with you?"
Customer: "I hope to do both."

The youngster had heard much about his little cousin Peter, although he had never seen him. At long last he was told Peter was coming for a visit and he registered great excitement.

Nobody could understand it when he took one look at his little cousin and burst into tears of disappointment.

"I thought," he sobbed, "that Peter was a rabbit."

The farmer whose pig was killed by an automobile was cussing and raving wildly.

"Don't worry," said the motorist, trying to pacify the bereaved owner. "I'll replace your pig."

"You can't," shouted the farmer, "you ain't fat enough."

A candidate for sheriff called on a minister to ask his vote at the coming election.

"Before I decide to give you my support," said the minister, "I would like to ask you a question."

"Shoot," said the candidate.

"Do you ever partake of intoxicating beverages?" inquired the clergyman.

"Before I reply, I would like to propound a single question," said the would-be sheriff cautiously, "Is this an inquiry or an invitation?"

Policeman (knocking at door) — "Lady, your dog has just been run over by a steam roller."

"Okay, slide him under the door."

Two cockroaches lunched in a gutter, and excitedly discussed the spotless glistening new restaurant in the next block.

"I hear," said one, "that the refrigerators shine like polished silver. The floor sparkles like diamonds. It's so clean."

"Please," said the second cockroach in disgust, "not while I'm eating!"

First person: "Dull party, isn't it?"
Second person: "Sure is."
First person: "Let's beat it."
Second person: "Can't. I'm the host."

Bargain Counter

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 30c per line. Minimum charge $1.20. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date—10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

Modernized, efficient 1½ Keystone well drill. 36′ steel derrick, ¾″ wire line cable, shock absorber, Hercules engine. On fast GMC '36 truck in excellent condition. 6″ and 8″ tools, jars, bailers, wrenches, anvil, forge, blower, etc. $2900, no less. Philadelphia Drilling Co., 200 W. Sedgwick St., Phila. 19, Pa.

Sullivan 22-HD core drill. New, has drilled less than 1500′. $11,000 inventory. Will sell, or trade for 24-L or 22-W. Box 242

BUSINESS FOR SALE

Pump and well drilling business in fastest growing region in the country, where wells and pumps are a necessity. Distributors for 2 nationally known pumps. Sales over $60,000 per year. Own land and building. Total cost everything — land, building, equipment and inventory — $25,000. Contact E. A. Engels, North West Pump & Supply Co., 1040 N. W. 54th St., Miami, Fla.

DRILLS FOR SALE

Howell No. 60. On rubber to be trailed behind pickup or truck. In A-1 shape. 4 cylinder LeRoi engine. 600′ ⅝″ drilling cable, 600′ ¾″ sand line. No tools. Guy Beemer, Lakota, Iowa, phone 2901.

New Bucyrus-Erie 21-W mounted on '42 model International truck. Drill is brand new — never been used. 500 ft. ⅝″ drill line. 500 ft. sand line, 4 bits, wrenches, tool tightener, blower, roller bearing and all other tools for drilling. Box 241

One Bucyrus-Erie 26-T drill on caterpillar mounting with rubber sheaves, spooling device, box mast, tool guide in A-1 condition. Price $4500 f.o.b. Madera, California. Write The Driller. Box 239

Failing slim-hole rotary rig, complete ready to go to work. Mtd. '42 GMC 3 axle truck, excellent thru-out. Bill Myers, 521 Oak, San Bruno, Calif.

Cyclone No. 0 with 6 H.P., gasoline engine, mounted on 1931 Dodge truck. Machine in fair condition, working every day. New wood frame. Derrick 28′ high. Ideal for 2″ and 3″ wells up to 200′. Price including truck $500. Contact Leland Crawford, New Troy, Mich.

Spudding mach. completely rebuilt like new with twin disc clutches, V belts to jack shaft. Tools, cordage, welding outfit, '42 F. truck all complete. Handle 1000′ to 1500′ or swing big tools for irrigation wells. With truck $4500, without truck $3500. F. White, 224 E. Washington, Lyons, Kansas.

Will trade 1947 semi-trailer mounted Keystone 50 for Bucyrus-Erie 22-W. Located in Wisconsin. Box 243

Keystone 3½ drill mounted on a good GMC truck, complete with tools. Donald Pagel, Route 1, Wisconsin Dells, Wis.

DRILLS FOR SALE

Bucyrus-Erie 33-W mounted on 1½ ton Chevrolet truck. Drill in good condition, recently overhauled. Can be seen working. J. S. Holman, Linden, Wis.

Bucyrus-Erie 21-W mounted on Ford V-8 truck. 31½′ derrick. Machine and truck in good condition. Cables included. No tools. Available immediately. Box 240

SHUR HIT drilling machine mounted on dual wheel four wheel drive. Less than 100 hours of drilling. Without cable or tools. $1700. AAA Drilling Co., 3911 Joy Road, Detroit 6, Michigan. TY 45600.

No. 14 Armstrong drill mounted on a '35 Diamond T truck. 2 strings of tools, 6 bits 4 to 8 in. All equipment for drilling. Wm. Klausler, Box 223, Cottonwood, Minn.

Cyclone Model 2083—mounted on solid tired truck. Both in good condition. With or without tools, ¾″ steel drill cable, ⅝″ sand line. Write or phone Harris Doubet, Hanna City, Ill.

Rotary drill, chain pull down, mounted on '42 V8 all in good condition, pipe, tools, etc., $3500. Fred E. Butler, 1013 So. Cedar St., Casper, Wyo.

Bucyrus-Armstrong 24-W mounted on 3½- to 5-ton 1936 International truck. Machine and truck in good condition. 500 ft. of new drill line and sand line. With or without tools. Box 235

One Fairbanks-Morse new 4 cyl. reversible marine diesel engine with clutch and all accessories complete. 120 hp at 450 rpm. Sell for about 50% off list price. Dealers protected. H. T. Holloway, 529 Majorca Ave., Coral Gables, Florida.

(continued on page 30)

DRILLS FOR SALE

(continued from page 29)

Bucyrus-Erie 21-W drill, equipped with fan blower, clutch-driven casing reel and other extras. Mounted on a 1936 Chevrolet L.W.B. 1½-ton truck, tires 32 x 6, 10 ply, 50%. All in excellent condition. Price f.o.b. Oblong, Ill. $3000. Come and see if interested. Owner—O. F. Culver, Oblong, Ill.

Bucyrus-Erie 22-W and 21-W drills. Both rigs mounted on late model trucks and equipped with tools for 6-inch work. 22-W equipped with calf reel spooling device, rubber set heel and speed sheaves, tool guide and ball bearing blower. 21-W equipped with tool guide. Will sell with or without tools or cable, with or without trucks. J. E. Miller, LaVergne, Tenn. Phone 38. Please phone.

Bucyrus-Erie 24-W drill, excellent shape with reconditioned LeRoi motor and ball bearing blower. Machine mounted on five ton White truck with reconditioned motor. Six good pneumatic tires. Box 236

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7000 ft. 4 in. I.D. black pipe 10.8 lbs. per ft. Appr. 10 ft. lengths — threaded recessed couplings. $1.60 per ft. F.O.B. Detroit. 50% deposit is required with each order. We reserve the right to allocate 1000 ft. to each new customer. AAA Drilling Co., 3911 Joy Rd., Detroit 6, Michigan, TY 45600.

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3 Cooks; 7⅝-7 stage deep well turbine, driven by Chrysler industrial engine (6 cyl.) V-belt drive, 200 gpm 200 ft. head, 200 ft. 4" column, line shaft, rubber bearings—gate valve, 200' ¼" gal. pipe, altitude gauge, water lubricated. New never used, $1735.

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Wanted: Sullivan type rotary for 6" hole 1200'. Complete. Send information and price in first letter. R. C. Danhouser, RR 1, Box 329, Menasha, Wis.

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Good driller to take charge of Bucyrus-Erie 22-W machine. Must be capable and understand setting screens. Good salary and commission. L. L. Oberlin, 265 Crystal Lake Drive, Pontiac, Mich.

Cable tool driller, steady work, $1.50 per hour plus bonus; also shop man to dress tools, weld, etc. Barney Moravec, Penn Yan, N. Y.

Year-round work, high wages for high-grade, sober, steady driller. Stewart Bros., Schenectady, N. Y. Night phone 6-1319.

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Driller with several years experience in hard rock drilling with cable tools. I am honest, sober and dependable and not afraid of hard work. Can furnish good references. Box 232

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